

WHAT IS CLAIMED:

- 1                   1.     A method of validating a color in a media environment, the method  
2     comprising:  
3                   receiving a selection of a color in a first color space;  
4                   mapping component values of the selected color to corresponding color  
5     component values in a reference color space;  
6                   converting the color component values in the reference color space to  
7     corresponding color component values in a second color space; and  
8                   determining the validity of the color component values in the second color  
9     space according to an established parameter.
- 1                   2.     A method according to Claim 1, wherein the first color space is a  
2     sRGB color space.
- 1                   3.     A method according to Claim 1, wherein the first color space is an  
2     RGB color space.
- 1                   4.     A method according to Claim 1, wherein the second color space is  
2     an NTSC color space.
- 1                   5.     A method according to Claim 1, wherein the second color space is a  
2     PAL color space.

1                   6.     A method according to Claim 1, wherein the second color space is a  
2     SECAM color space.

1                   7.     A method according to Claim 1, wherein the first color space is valid  
2     for a computer monitor.

1                   8.     A method according to Claim 1, wherein the second color space is  
2     valid for a television monitor.

1                   9.     A method according to Claim 1, wherein the second color space is  
2     valid for a video monitor.

1                   10.    A method according to Claim 9, wherein the video monitor includes  
2     a special purpose video display having a color gamut different than a television monitor.

1                   11.    A method according to Claim 1, wherein the first color space is one  
2     of a NTSC color space, a PAL color space, and a SECAM color space, and the second  
3     color space is either of a sRGB color space and an RGB color space.

1                   12.    A method according to Claim 1, wherein the reference color space  
2     includes a CIE XYZ color space.

1                   13.    A method according to Claim 1, wherein the reference color space is  
2     standardized by the International Electrotechnical Commission (IEC).

1                   14.    A method according to Claim 1, wherein the established parameter  
2 includes color component values each within a range of [0,1].

1                   15.    A method according to Claim 1, wherein choosing a color in a first  
2 color space includes normalizing the component values of the chosen color in accordance  
3 with the number of bits-per-channel in the first color space.

1                   16.    A method according to Claim 1, wherein converting the color  
2 component values in the reference color space includes converting the color component  
3 values in the reference color space to corresponding color component values in a  
4 normalized TV color space.

1                   17.    A computer-accessible medium having one or more instructions that  
2 are executable by one or more processors, the one or more instructions causing the one or  
3 more processors to:

4                   detect a color selected from a color model;  
5                   correct component values for the selected color;  
6                   convert the corrected component values to corresponding component values  
7 in a fundamental color coordinate system; and  
8                   convert the component values in the fundamental color coordinate system  
9 to corresponding component values in a target color space.

1                   18.    A computer-accessible medium according to Claim 17, wherein the  
2   one or more instructions further include indicating whether the converted component  
3   values in the target color space are valid for display.

1                   19.    A computer-accessible medium according to Claim 17, wherein to  
2   correct component values for the selected color is to normalize the component values in  
3   accordance with the number of bits-per-channel for the color model.

1                   20.    A computer-accessible medium according to Claim 18, wherein the  
2   component values in the target color space in the range of [0,1] are indicated to be valid  
3   for display.

1                   21.    A computer-accessible medium according to Claim 17, wherein the  
2   color model includes a graphical user interface depiction of a two-dimensional (2-D)  
3   section of a three-dimensional (3-D) color space, wherein further the 2-D section includes  
4   a slice of the 3-D color space based on a current dominant color selection.

1                   22.    A computer-accessible medium according to Claim 17, wherein the  
2   color model references a color gamut for a computer monitor.

1                   23.    A computer-accessible medium according to Claim 22, wherein the  
2   color gamut for a computer monitor corresponds to a sRGB color space.

1                   24.    A computer-accessible medium according to Claim 22, wherein the  
2   color gamut for a computer monitor corresponds to an RGB color space.

1                   25.    A computer-accessible medium according to Claim 17, wherein the  
2   target color space is a PAL color space.

1                   26.    A computer-accessible medium according to Claim 17, wherein the  
2   target color space is an NTSC color space.

1                   27.    A computer-accessible medium according to Claim 17, wherein the  
2   target color space is a SECAM color space.

1                   28.    A computer-accessible medium according to Claim 17, wherein the  
2   target color space corresponds to a specialized video signal format.

1                   29.    A computer-accessible medium according to Claim 17, wherein the  
2   fundamental color coordinate system is a color space standardized by the International  
3   Electrotechnical Commission (IEC).

1                   30.    A computer-accessible medium having one or more instructions that  
2   are executable by one or more processors, the one or more instructions causing the one or  
3   more processors to:

4                   detect a color selected from a graphic user interface (GUI) color palette;

5                   normalize component values of the selected color in accordance with the  
6   number of bits-per-channel;  
7                   convert the normalized component values to corresponding component  
8   values in a standardized reference color coordinate system; and  
9                   convert the component values in the standardized reference color  
10   coordinate system to corresponding component values in a receiver color coordinate  
11   system.

1                   31.    A computer-accessible medium according to Claim 30, wherein the  
2   GUI color palette depicts a plane of a multi-dimensional color space predicated upon a  
3   dominant color selection.

1                   32.    A computer-accessible medium according to Claim 30, wherein the  
2   GUI color palette depicts a rotatable 3-D rendering of an X-dimensional ( $X \geq 6$ ) color  
3   space predicated upon a dominant color selection.

1                   33.    A computer-accessible medium according to Claim 30, wherein to  
2   normalize the component values of the detected color is to gamma-correct the component  
3   values.

1                   34.    A computer-accessible medium according to Claim 30, wherein to  
2   convert the component values in the standardized reference color coordinate system to  
3   corresponding component values in the receiver color coordinate system further is to

4 gamma-correct the converted component values in the standardized reference color  
5 coordinate system.

1           35. A computer-accessible medium according to Claim 30, wherein the  
2 one or more instructions causing the one or more processors to convert the component  
3 values in the standardized reference color coordinate system further causes the one or  
4 more processors to calculate a minimum average component value if one of the converted  
5 component values exceed a range of [0,1].

1           36. A computer-accessible medium according to Claim 30, wherein the  
2 one or more instructions causing the one or more processors to convert the component  
3 values in the standardized reference color coordinate system further causes the one or  
4 more processors to default to a next-closest color component value match if one of the  
5 converted component values exceed a range of [0,1].

1           37. A computer-accessible medium according to Claim 36, wherein the  
2 next-closest color component value match is determined in accordance with a  
3 mathematical projection.

1           38. A computer-accessible medium according to Claim 30, further  
2 comprising one or more instructions causing the one or more processors to indicate that  
3 the detected color is invalid and request another color be selected from the GUI color  
4 palette if one of the converted component values exceed a range of [0,1].

1           39.    A computer-accessible medium according to Claim 30, wherein the  
2   standardized reference color coordinate system is a CIE XYZ system.

1           40.    An apparatus for validating a color picked in a first environment in a  
2   second environment, comprising:

3               a user interface to receive a selection of a color associated with a first color  
4   space;

5               a normalizer to linearize component values associated with the selected  
6   color;

7               a first converter to convert the linear component values from the first color  
8   space to component values in a reference color space; and

9               a second converter to convert the component values from the reference  
10   color space to component values in a second color space.

1           41.    An apparatus according to Claim 40, wherein the user interface  
2   includes a planar depiction of a 3-D color space based on a current dominant color  
3   selection.

1           42.    An apparatus according to Claim 40, wherein the user interface  
2   includes a color model presenting a rotatable 3-D rendering of an X-dimensional ( $X \geq 6$ )  
3   color space predicated upon a dominant color selection.

1           43.    An apparatus according to Claim 40, wherein the normalizer is to  
2   convert the component values associated with the selected color to floating point non-



3 linear values and gamma-correct the non-linear values, all in accordance with a number  
4 of bits per channel associated with the first color space.

1 44. An apparatus according to Claim 40, wherein the first converter is to  
2 map the linear component values associated with the color to component values in a  
3 reference color space.

1 45. An apparatus according to Claim 44, wherein the reference color  
2 space includes an IEC 61966-2 color space.

1 46. An apparatus according to Claim 44, wherein the reference color  
2 space is standardized by the International Electrotechnical Commission (IEC).

1 47. An apparatus according to Claim 40, wherein the second converter is  
2 to convert the component values from the reference color space to component values in a  
3 color space corresponding to a video standard.

1 48. An apparatus according to claim 40, wherein the first color space  
2 includes one of a sRGB and an RGB color space.

1 49. An apparatus according to Claim 40, wherein the second color space  
2 includes any one of an NTSC, a PAL, and a SECAM color space.

1                   50.    An apparatus according to Claim 40, wherein the second color space  
2 includes a color space for video monitors having different gamut limits than television  
3 monitors.

1                   51.    An apparatus according to Claim 50, wherein the video monitors  
2 having different gamut limits than television monitors includes either of aviation or  
3 maritime cockpit displays.

1                   52.    An apparatus according to Claim 40, wherein component values  
2 converted from the reference color space to the second color space within the range of  
3 [0,1] are valid for display in the second environment.

1                   53.    An apparatus according to Claim 53, wherein, when the converted  
2 component values in the second color space are within the range of [0,1], the user  
3 interface simulates a color corresponding to the converted component values in the  
4 second color space.

1                   54.    An apparatus for validating a color picked in a first environment in a  
2 second environment, comprising:

3                   means for receiving a selection of a color associated with a first color  
4 space;

5                   means for linearizing component values associated with the selected color;

6                   means for converting the linear component values from the first color space  
7 to component values in a reference color space; and

- 8                    means for converting the component values from the reference color space
- 9    to component values in a second color space.